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NUCLEAR MATERIAL MANAGEMENT IN RUSSIA AND NEW FEDERAL NUCLEAR MATERIAL CONTROL AND ACCOUNTING REGULATIONS

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Abstract

The Russian Federation Ministry of Atomic Energy (Minatom) is the federal authority empowered with the management of state-owned nuclear materials, with the exception of military applications. The Russian Federal Nuclear Materials Control and Accounting Information System (FIS) is a key component in establishing an effective nuclear materials management system in the Russian Federation.

In December 2000, the Russian government issued the decree to enter into force the regulation on the accounting and control of nuclear materials and directed the State System of Accounting and Control (SSAC) of nuclear materials should begin October 2001. This regulation establishes the basic accounting documents and the requirement to report them to the FIS to launch the State Nuclear Material Registry of nuclear materials.

The Nuclear Material Registry contains information on agencies and operating organizations that use nuclear material, along with the kinds, quantity and other characteristics of nuclear material. Minatom will use the Registry and the supporting database and functionality that reside in the FIS for carrying out the functions of nuclear materials management.

At the same time, the FIS provides for reporting from material balance areas (MBA). With American support, 14 Russian enterprises are reporting material balance area level information to the FIS using full-function reporting (i.e., reporting inventory and inventory changes including closeout and reconciliation between the FIS and enterprises).

Russian Federation regulations for nuclear material control and accounting and nuclear materials management have been or are being developed, some of which may impact the FIS, whether for full-function reporting or its support in preparing the Nuclear Material Registry.

This paper discusses the role and the place of the FIS in nuclear material management, describes the goals and challenges facing the FIS based on Russian Federation regulations, and provides a brief description of the Nuclear Material Registry and the procedures used in its creation.

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I. Nuclear Material Control and Accounting: a Key Component in the Russian Federation Nuclear Material Management System

Nuclear control and accounting regulations establish that the "goals of state nuclear material control and accounting are to create and provide the conditions required for efficient state management of nuclear materials within the Russian Federation".

According to Article 5 of the Russian Federal law "On the Use of Atomic Energy" (21 November 1995), "All nuclear material is federal property. Federally owned nuclear material may be transferred only to legal entities duly licensed by state safety regulatory agencies to conduct activities related to the use of atomic energy. Said transfers may be implemented on the basis of agreements concluded by a specially authorized state agency".

The Order of the Government of the Russian Federation "On the State Agency Specially Empowered to Conclude Agreements for the Transfer of Nuclear Material for Use by Legal Entities" (15 September 1998) designated the Russian Federation Ministry of Atomic Energy (Minatom) as the federal executive branch agency authorized to manage federally owned nuclear material, with the exception of nuclear material transferred in the form of products to the Russian Federation Ministry of Defense.

Minatom developed and implemented the Temporary Regulation on Nuclear Material Management in order to define the major management goals, objectives, methods and procedure for nuclear material used by legal entities. The Temporary Regulation stipulates:

- The signing of agreements for the transfer of federally owned nuclear material for use by legal entities;
- The issuance of licenses for the transfer of nuclear material between legal entities;
- *Compliance with state nuclear material control and accounting requirements;*
- Monitoring by Minatom of the use of nuclear material pursuant to the terms of agreements on the transfer of nuclear material for use by legal entities.

II. Legal and Regulatory Environment for Nuclear Material Control and Accounting

It should be noted that nuclear material control and accounting has been a priority since the inception of the nuclear industry in the USSR (Russia). Although its principles did not conform to modern requirements, strict measures for the accounting and safekeeping of nuclear material were observed.

The transition to a new economic and political environment in Russia during the eighties and nineties necessitated fundamental changes in all aspects of nuclear material management and, consequently, in nuclear material control and accounting. The most immediate concern was the need to create a legal and regulatory framework for nuclear material control and accounting. The current relevant regulatory documents are described below.

Law on the Use of Atomic Energy

The Federal Law "On the Use of Atomic Energy," which was adopted in 1995, stipulated for the first time the fundamental legal principles of nuclear material control and accounting. It was also the first document to define nuclear material control and accounting as a type of activity related to the use of atomic energy, and established the following provisions:

- Nuclear material is subject to state control and accounting at the state and ministry level;
- The Government of the Russian Federation establishes the procedure for the organization of the SSAC and designates the agencies that implement state nuclear material control and accounting.

Conceptual Design of State Nuclear Material Control and Accounting

In 1996, the Government of the Russian Federation adopted the Conceptual Design of State Nuclear Material Control and Accounting. The Conceptual Design established:

- The major concepts of the SSAC;
- Nuclear material control and accounting objectives;
- A basic outline of the system of legal and regulatory documents that govern the SSAC;
- The structure and functions of the SSAC;
- Major operating principles of the SSAC;
- A list of the nuclear material and special non-nuclear material subject to control and accounting in the Russian Federation.

Organizational Rules of the State System for Nuclear Material Accounting and Control

The next federal level document developed for the state system for nuclear material accounting and control was Organizational Rules of the State System for Nuclear Material Accounting and Control, which was adopted by Order of the Government of the Russian Federation (10 July 1998) and stipulated:

- The organizational procedure for the SSAC, which must be implemented by all legal entities;
- The designation of Minatom as the federal management agency for the SSAC;
- The functions of Minatom and other executive branch agencies providing state management for the use of atomic energy (Nuclear and Radiation Safety Authority of Russia - Gosatomnadzor, Ministry of Internal Affaires, Ministry of Foreign Affaires, Customs Committee, etc.) pursuant to the operation of the SSAC.

Regulation on State Nuclear Material Control and Accounting

On 15 December 2000 the Government of the Russian Federation adopted the Regulation on State Nuclear Material Control and Accounting, which specified:

- The objectives and procedure for maintaining state nuclear material control and accounting;

- The liaison procedure for relevant federal executive branch agencies, the Russian Academy of Sciences, operating organizations and organizations performing work and services for the latter.

This regulation developed the first reporting procedure for the SSAC at the federal and agency level. Specifically, it established a procedure for organizations handling nuclear material to report to their superior federal executive branch agency or the Russian Academy of Sciences, as well as to Minatom. These reports include:

- An annual report on enterprise nuclear material, submitted in January of the year following the reporting year;
- A quarterly report containing summarized data on nuclear material inventory changes (movements).

A physical inventory of nuclear material is conducted at least once a year at organizations handling nuclear material in order to validate accounting data for all their nuclear material. During this inventory, the actual quantity and state of nuclear material located at material balance areas (MBAs) is measured, analyzed and documented. A report is compiled on physical inventory results for each MBA and is submitted to the organization's nuclear material accounting department. The report contains information on the actual nuclear material inventory, the inventory difference and its uncertainty. Within 15 days after the inventory has been completed, the organization submits summarized physical inventory data to its superior federal executive branch agency or the Russian Academy of Sciences, depending on its affiliation.

Additional reports submitted by the organization to its federal executive branch agency or the Russian Academy of Sciences, as well as to the Minatom, include:

- A report on the movement of nuclear material between these organizations, which is submitted within one day after each nuclear material shipment (receipt);
- A special report on nuclear material accounting anomalies (submitted immediately).

Within 10 days after a nuclear material shipment or receipt, legal entities that import or export nuclear material submit information to the Minatom in the form adopted by this Ministry pursuant to established procedure.

Minatom, in conjunction with the State Customs Committee of the Russian Federation, stipulates the control and accounting procedure for nuclear material that is the property of a foreign state located temporarily within the territory of the Russian Federation.

Basic Nuclear Material Control and Accounting Rules (Draft)

Basic Nuclear Material Control and Accounting Rules is an important element within the system of regulatory documents that govern nuclear material control and accounting in Russia. The document has already been developed and is scheduled for implementation in January 2002. Basic Nuclear Control and Accounting Rules is a federal regulatory document that establishes the criteria and requirements for nuclear material control and accounting.

The regulation establishes:

- Criteria for entering, terminating, and releasing nuclear material from accounting;
- The minimum quantity of nuclear material subject to state control and accounting;
- The precision with which a mass of nuclear material must be specified in a reporting document;
- Parameters for determining the category of nuclear material in MBAs;
- Numerical criteria for detecting nuclear material control and accounting anomalies.

III. State Register of Nuclear Material

The concept of the State Register of Nuclear Material was first introduced in Organizational Rules of the State System for Nuclear Material Accounting and Control (1998), which established that Minatom is to "maintain a state register of nuclear material." The document did not, however, specify a procedure for creating and maintaining the register.

The Regulation on State Nuclear Material Control and Accounting (2000) developed basic requirements for the formation, composition, and use of the State Register of Russian Federation Nuclear Material and registers for executive branch agencies that control and account for nuclear material at the agency level.

Pursuant to the above requirements and the order of the Government of the Russian Federation, Minatom coordinated with the Ministry of Property Relations of the Russian Federation to develop forms for state and agency registers of nuclear material, as well as the regulation Procedure for Developing and Using the State Register of Nuclear Material of the Russian Federation.

The regulation stipulates:

- The general procedure for organizing the development and use of the State Register of Russian Federation Nuclear Material and agency registers for federal agencies and the Russian Academy of Sciences;
- The authority and obligations of Minatom, federal agencies, the Russian Academy of Sciences, and organizations that handle nuclear material with regard to developing the State Register of Russian Federation Nuclear Material and agency registers.

The State Register of Russian Federation Nuclear Material is the primary accounting document within the SSAC. The Register is regarded as a federal information resource and is subject to accounting in the register of federal property.

The State Register of Russian Federation Nuclear Material is maintained for nuclear and special non-nuclear material subject to state control and accounting in accordance with the List, which is attached to the document Organizational Rules of the State System for Nuclear Material Accounting and Control.

The State Register of Russian Federation Nuclear Material contains information on the following subjects:

- Federal executive branch agencies and the Russian Academy of Sciences, which implement nuclear material control and accounting at the agency level;
- Organizations that handle nuclear material;
- Legal bases for the use of nuclear material by organizations for authorized types of activities;
- The kinds of nuclear material accounted for within the State Register of Russian Federation Nuclear Material;
- Quantities of accountable nuclear material.

The State Register of Russian Federation Nuclear Material consists of three sections and appendices:
- Section 1: "Organizations That Handle Nuclear Material";
- Section 2: "Generalized List of Nuclear Material Included in the State Register of Russian Federation Nuclear Material";
- Section 3: "Generalized Data on Russian Federation Nuclear Material";
- Appendices.

Section 1 identifies the organizations that handle nuclear material and their affiliation with federal executive branch agencies and the Russian Academy of Sciences. The complete and abbreviated name of each organization is specified, as well as its address, and the legal bases for its use of nuclear material (the requisites of the agreement for transferring nuclear material for use by a legal entity).

Section 2 presents a generalized list of nuclear material included in the State Register of Russian Federation Nuclear Material. The composition, name and characteristics of nuclear material are specified in a form that most accurately reflects the specific features of the nuclear fuel cycle in the Russian Federation.

Section 3 provides generalized data on Russian Federation nuclear material. Information is arranged according to the list established in Section 2.

The Appendices present generalized data on nuclear material located at federal executive branch agencies and the Russian Academy of Sciences (grouped according to organization) and at organizations that do not report to a federal executive branch agency or the Russian Academy of Sciences. This is an all-encompassing compilation.

The information presented in the sections and appendices of the State Register of Russian Federation Nuclear Material reflects the status of nuclear material and the organizations that handle this material as of January 1st of the reporting year. Minatom compiles the State Register of Russian Federation Nuclear Material annually, no later than April 1st.

The source data for the State Register of Russian Federation Nuclear Material consists of information extracted from organizations' annual nuclear material inventory reports and the registers of the Russian Academy of Sciences and federal executive branch agencies that implement nuclear material control and accounting at the agency level.

Organizations' annual nuclear material inventory reports are submitted to Minatom before January 15th of the reporting year. The approved State Register of Russian Federation Nuclear Material is submitted to the Ministry of Property Relations of the Russian Federation for registration and accounting purposes.

An agency register of nuclear material contains information on the following subjects:

- Subordinate organizations that handle nuclear material;
- Legal bases for the use of nuclear material for authorized types of activities;
- The kinds and quantities of nuclear material used by subordinate organizations that handle nuclear material.

An agency register of nuclear material consists of two sections:

- Section 1: "Organizations That Handle Nuclear Material";
- Section 2: "Generalized Data on Nuclear Material."

Section 1 specifies the complete and abbreviated name of each organization, its address, and legal bases for using nuclear material (the requisites of the agreement for transferring nuclear material for use by a legal entity).

Section 2 presents generalized data on nuclear material that is arranged by organization and according to the list of nuclear material included in the State Register of Russian Federation Nuclear Material.

Agency registers of nuclear material as of January 1st are submitted to Minatom before February 1st of the reporting year.

Data from agency registers of nuclear material is used for the following purposes:

- To plan the activity of federal executive branch agencies and the Russian Academy of Sciences related to the use and storage of nuclear material;
- To prepare the State Register of Russian Federation Nuclear Material.

IV. Role of the FIS in Support of the State Register of Nuclear Material and Nuclear Material Management in the Russian Federation

Minatom is supporting the development and operation of the automated Federal Information System for Nuclear Material Control and Accounting (FIS) in order to gather information for, systemize and analyze the status of the SSAC.

Atominform and the Minatom's Situation and Crisis Center (SCC) are developing and operating the FIS to gather, process, analyze, and archive information on nuclear material located at enterprises that handle nuclear material, its movement, and use.

The FIS supports the departments and directorates of Minatom and executive branch agencies that implement state atomic energy management, state regulation of nuclear, radiation, technical and fire safety for the use of atomic energy, and accounting of federal property. The system also provides these organizations with the information they require for the proper exercise of their authority.

FIS hardware and software is used to produce the State Register of Russian Federation Nuclear Material.

V. Plans and Objectives for the Development of the State System for Nuclear Material Accounting and Control in 2001

Issues related to the development of the SSAC were reviewed at a meeting of the Government of the Russian Federation in September 2000. Minatom submitted a special report to the Government regarding activities conducted in preparation for the deployment of the SSAC on 15 December 2000. The Government issued a special order adopting the "Regulation on State Nuclear Material Control and Accounting" and giving special instructions to Minatom for the deployment of the SSAC.

The Government established the following priorities for the development and operation of the SSAC:

- Further development of the FIS;
- Development and use of uniform methods for measuring the characteristics of nuclear material;
- Provision of domestically produced instruments and equipment to facilities that handle nuclear material for the measurement of its characteristics;
- Accounting, consolidation and conversion of unclaimed nuclear materials, which are not well used, accounted for or protected;
- Coordination of the activities of state agencies and organizations related to international cooperation for the control and accounting of nuclear material.

Before 1 July 2001, Minatom, in conjunction with the relevant federal executive branch agencies, will develop and approve report forms for state nuclear material control and accounting, as well as the procedure and schedule for submitting these reports, and will gather information on the quantity, characteristics and location of nuclear material in support of the SSAC. Beginning in October 2001, the SSAC will be operational and in full compliance with current regulations.

Conclusion

Through regulations, this development of the nuclear material control and accounting system provides the Russian Federation with the ability to inventory, track, control, and manage its nuclear inventory. This enables Minatom, as the agent of the federal government, to take steps to ensure the proper and authorized use of the state's nuclear material and support the commitments of the Russian Federation to nuclear nonproliferation.

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